

# PATENT SPECIFICATION

DRAWINGS ATTACHED



**904,634**

Date of Application and filing Complete Specification Oct. 26, 1959.

No. 36161/59.

Application made in Germany (No. H37213) on Aug. 19, 1959.

Complete Specification Published Aug. 29, 1962.

Index at acceptance:—Classes 94(1), C10A, C10B1(B:C), C10B1D(1:4:5), C10L(1A:2A); and 78(1), S3D.

International Classification:—B65b. B65g.

## COMPLETE SPECIFICATION

### A Device for Feeding Articles, e.g. to a Wrapping Machine

We, HANSELLA-WERKE ALBERT HENKEL A.G. a German Company, of Viersen Bez., Dusseldorf, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a device for feeding articles, for example, a device for feeding articles to be wrapped to a wrapping machine, and particularly a device in which a plate is provided for receiving the articles to be wrapped which has on its margin for the articles to be supplied to the wrapping machine.

Devices of this kind are known in themselves. For example a wrapping machine for sweets is known in which the plate receiving the sweets is moved stepwise, so that the sweets put on the plate move by centrifugal force towards the circumference of the plate and there drop into the wrapping pockets. Moreover devices have become known, in which the sweets to be wrapped are moved into the wrapping pockets of the supply plate by the aid of a rotary rake. Finally it has also become known to arrange rotary brushes at the margin of the supply plate which serves likewise for filling the wrapping pockets of the stepwise rotating plate.

In all these machines the most essential difficulty consists in making provision that all wrapping pockets have received one of the articles to be wrapped before they arrive at the discharge point; the known devices are not completely satisfactory when a high output is required. Moreover the filling of the pockets has to be carried out very carefully particularly with sweets, since otherwise the sweets splinter, or soft centre sweets are squashed.

The invention has the object of overcoming the aforesaid deficiencies.

[Price 4s. 6d.]

According to the invention, a device for feeding articles is provided, comprising a continuously rotatable plate having pockets for said articles formed therein, said plate, in a region inwardly adjacent to the pockets, sloping upwards from the pockets towards its axis or rotation, and a stationary deflector extending over the path of movement of the pockets, arranged to deflect articles in the path which are not in the pockets inwardly from the pockets and up said sloping region, and then to permit the deflected articles to move downwardly and outwardly towards the pockets under the action of gravity.

A further particular feature of the invention consists in that said pockets are formed as apertures in the rotatable plate, and below the plate in the region of said apertures a guide ring is arranged on which articles lying in said apertures can slide, said guide ring being deformed downwardly in the region of the discharge point in such a manner that pusher members provided on discharge means and passing through the slot in the guide ring can reach behind articles to be discharged from their pockets and can discharge them, without fouling the rotatable plate.

Further details of the invention will be explained hereinafter with reference to an embodiment illustrated by way of example in the drawings, in which:—

Figure 1 is a plan view of the device according to the invention;

Figure 2 is a section on the line II—II of Figure 1;

Figure 3 is a detail of Figure 1 on a larger scale.

Figure 4 is a section on the line IV—IV of Figure 2,

Figure 5 shows the discharge point of the device, and

Figure 6 will be a section on the line VI—VI of Figure 5.

As will be seen particularly in Figure 1,

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the device for feeding the sweets to the wrapping machine (not shown) comprises a plate 1 which is provided at its margin with pockets 2 for receiving the sweets. The 5 sweets are supplied from a container 3 over a vibrator chute 4, which is switched on or off by a switch 5 responsive to the level position by a feeler drum 6, which is rotatably mounted on the end of a lever connected to the switch 5.

If more sweets are being supplied than are necessary to fill the pockets, they will accumulate around the rim of plate 1. Drum 6, which rolls lightly over the sweets will 10 be raised and when it passes a predetermined level it will act, through the connecting lever, on the switch 5 to stop the vibrator.

The plate 1, as will be seen particularly in Figure 2, is frusto-conical in form, so that in the region adjacent to the pockets, it slopes upwards from the pockets towards its axis of rotation. It is surrounded by a stationary bowl-shaped annular rim 7 which prevents the sweets from dropping off the plate 15 1. On the rim 7 deflectors 8 are arranged around the circumference of the plate 1 which are wedge-shaped, the points 8<sup>1</sup> of the wedges being forward. Throughout this specification and in the claims the word "forward" is used 20 in the sense of direction opposed to the direction of rotation of the rotatable plate. At the rear end 8<sup>11</sup> of each deflector the inner corner (i.e. the corner nearer to the axis of the plate) is rounded. The deflectors are made of 25 a flexible material, e.g. of rubber. They are attached to the rim 7 by the aid of clamping screws 9, 10 in such a manner that they can be adjusted in their level position and in their angular position relative to the conical plate 1 depending on the shape and thickness of the sweets.

The last deflector 8<sup>a</sup>—as viewed in the direction of rotation of the plate 1—before the point of delivery 17 is extended in the 30 direction of its inner edge by a strip of sheet metal 11 standing upright on edge, which ends immediately behind the point of delivery 17 and is likewise rounded at its rear edge 11<sup>1</sup>. The height of the sheet metal strip 11 corresponds approximately to that of the bowl-shaped rim 7. Between the last deflector 8<sup>a</sup> before the point of delivery 17 and the margin 7 moreover a wedge 12 of a 35 foam rubber is arranged, which has likewise the height of the margin 7.

Under the plate 1 a guide ring 13 is arranged which prevents the sweets lying in the pockets 2 of the plate 1, which are formed as apertures in the plate, from dropping out downwardly. The guide ring 13 is deformed downwardly in the range of the delivery point 17 (Figure 6); it is moreover provided with a slot 14 for the passage 40 of the pusher members 15 provided on a conveyor chain 16.

The device described operates as follows: When after switching on the wrapping machine and the vibrator conveyer chute the plate 1 has performed several revolutions, those sweets, which have not yet been lodged in the pockets of the plate 1, about the sheet metal strip 11 ending immediately behind the delivery point 17 and slide owing to the conical shape of the plate 1 first upwards along the strip 11 and then past the rounded rear edge 11<sup>1</sup> of the sheet metal strip 11 down in the direction of the empty pockets 2. Those sweets, which do not find a place in the pockets 2 immediately behind the delivery point 17 and consequently lie on the rim of the plate 1 on top of the sweets in the pockets 2, are engaged by the first deflector 8—as viewed in the direction of rotation of the plate—and are deflected inwardly owing to the wedge shaped design of the deflector; owing to the conical design of the plate 1 the deflected sweets are at the same time forced upward so that they slide anew downward under the action of gravity in the direction of the rim of the plate, after having arrived at the rounded edge 8<sup>11</sup> of the deflector, and are then available for filling those pockets 2 moving past under the rear edge of the deflector, which are not yet filled. 70

The operation described hereinabove repeats itself at each of the deflectors 8, which are arranged distributed around the circumference of the plate 1. The last deflector 8<sup>a</sup> before the point of delivery 17 passes the sweets sliding along its inner edge to the aforesaid piece of sheet metal 11, along which the sweets are conveyed behind the delivery point and thence, as described hereinabove, into the emptied pockets. 75

The foam rubber wedge 12 provided on the deflector 8<sup>a</sup> ensures that the sweets sliding along the inner edge of the deflector 8<sup>a</sup> can no longer get into the range of those pockets 2 which have already passed the deflector 8<sup>a</sup>, so that no supernumerary sweets can reach the delivery point 17. For the same purpose the height of the sheet metal strip 11 corresponds approximately to that of the bowl-shaped rim 7. 80

The guide ring 13, on which slide the sweets lying in the pockets 2 of the plate 1, is so arranged that the sweets completely fill the pockets. For the purpose of adaptation to the thickness of the sweets actually to be treated it may be adjustable in height. The downward deformation of the guide ring 13 in the range of the delivery point 10, has the effect that the pusher members 15 of the conveyer chain 16 can reach behind the sweets lying in the pockets 2 without fouling the plate 1 and push the sweets out of the pockets 2, delivering them to the wrapping machine. 90

As mentioned, the conical plate 1 and the guide ring 13 are so positioned in relation 95

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to one another that in adaptation to the thickness of the sweets to be treated the pockets 2 on the margin of the plate 1 are completely filled when they have taken in a sweet. The 5 deflectors 8 are so adjusted in height and in their angular position with respect to the conical plate 1, that they deflect inwardly and upwardly the supernumerary sweets lying on top of the pockets already filled.

10 However, even when one of the supernumerary sweets should jam between a filled pocket 2 and a deflector 8, no damage arises to the sweet, since (as illustrated in Figure 4) the resilient deflectors 8 can give way upwardly.

15 WHAT WE CLAIM IS:—

1. A device for feeding articles, e.g. to a wrapping machine, comprising a continuously rotatable plate having pockets for said articles formed therein, said plate, in a region inwardly adjacent to the pockets, sloping upwards from the pockets towards its axis of rotation, and a stationary deflector extending over the path of movement of the pockets, arranged to deflect articles in its path which are not in the pockets inwardly from the pockets and up said sloping region, and then to permit the deflected articles to move downwardly and outwardly towards the pockets under the action of gravity.
2. A device according to Claim 1, wherein said pockets are formed in the periphery of the rotatable plate.
3. A device according to Claim 1 or 2, wherein said plate is frusto-conical in shape.
4. A device according to any preceding claim, wherein said deflector is mounted on a stationary ring surrounding the plate.
5. A device according to any preceding claim, wherein an inner edge of the deflector extends across the path of movement of the pockets at an acute angle to said path, the rear end of the deflector being nearer to the axis of rotation of the plate.
6. A device according to Claim 5, wherein the rear inner end of the deflector is rounded.
7. A device according to Claim 5 or 6, wherein the deflector is wedge-shaped, and is arranged with the point of the wedge forward.
8. A device according to any preceding

claim, wherein the deflector is formed of a flexible material in such a manner that it can yield upwardly to avoid damage to any of said articles.

9. A device according to any of Claims 1 to 7, wherein a discharge point is provided in the path of rotation of the pockets, and wherein the deflector is arranged to deflect articles not in the pockets away from said discharge point.

10. A device according to Claim 9, wherein said deflector comprises a sheet metal member arranged substantially vertically, the forward end of the member being forward of the discharge point and the rear end being immediately behind the discharge point.

11. A device according to Claim 10, wherein forward of the sheet-metal member the deflector comprises a wedge-shaped piece of soft material.

12. A device according to Claims 9, 10 or 11, wherein said pockets are formed as apertures in the rotatable plate, and wherein below the plate in the region of said apertures a guide ring is arranged on which articles lying in said apertures can slide, said guide ring being deformed downwardly in the region of the discharge point in such a manner that pusher members provided on discharge means and passing through a slot in the guide ring can reach behind articles to be discharged from their pockets and can discharge them, without fouling the rotatable plate.

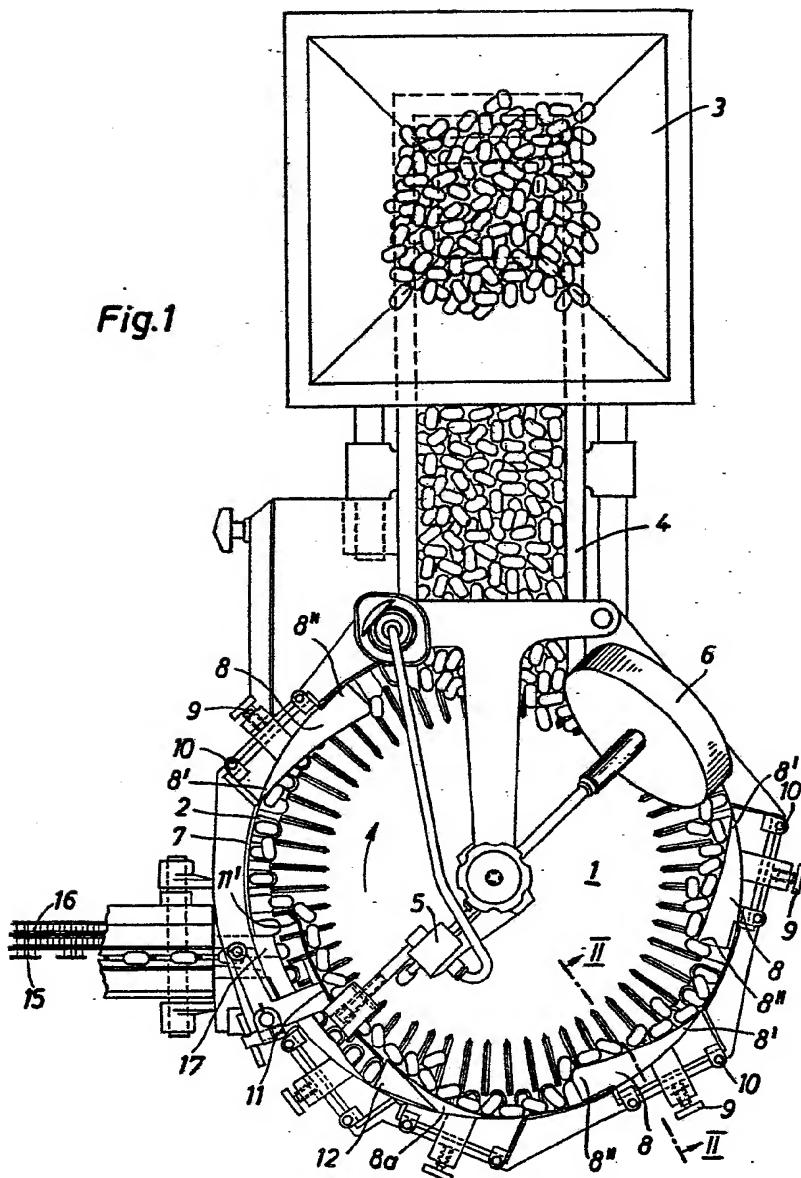
13. A device according to Claim 1, 2 or 3 comprising a plurality of deflectors as described in any of Claims 4 to 8.

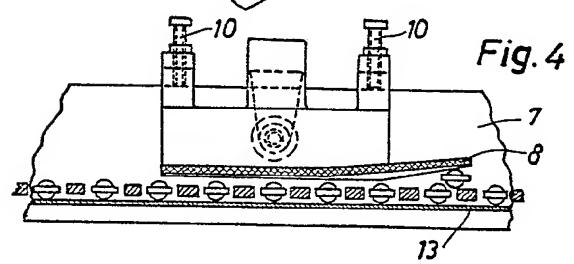
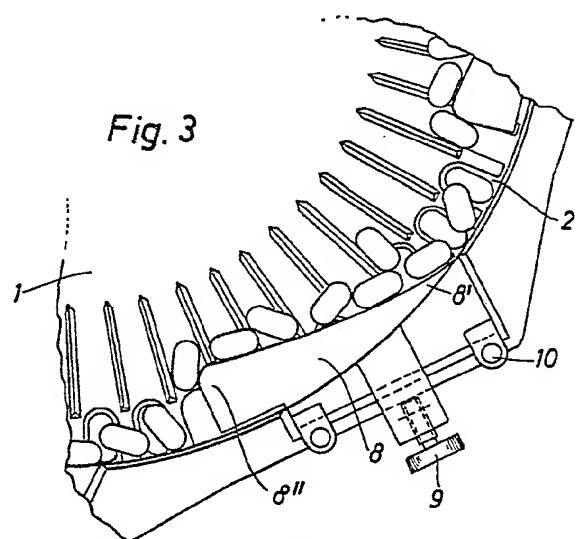
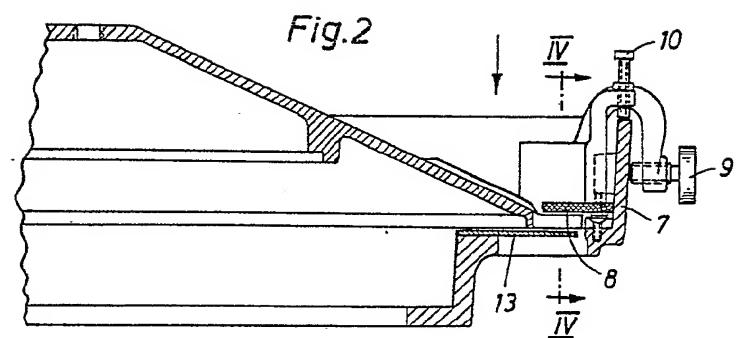
14. A device according to any of Claims 1 to 8 or 13 comprising, in addition to the deflector or deflectors there described, a single deflector as described in any of Claims 9 to 11.

15. A device for feeding articles, e.g. to a wrapping machine, substantially as herein described with reference to the accompanying drawings.

A. A. THORNTON & CO.,  
Chartered Patent Agents,  
303/306, High Holborn, London, W.C.1,  
For the Applicants.  
Northumberland House,

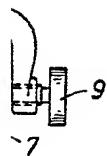
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                  Sheet 1



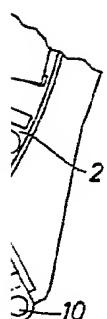


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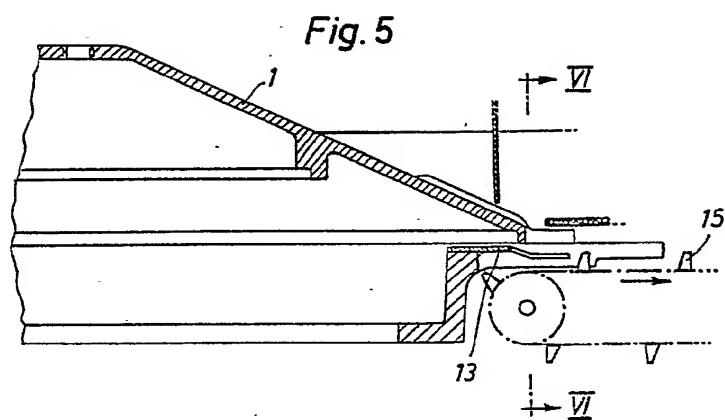
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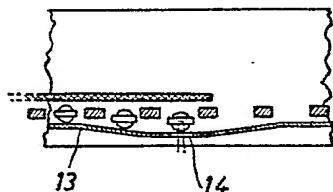
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*Fig. 6*



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